Beaver Lake Monitor

A publication of the Beaver Lake Management District Advisory Board ✧ Volume 3, Issue 4 ✧ December 2000

In this issue

Beaver Lake Management Plan Meeting

The Beaver Lake Management District Advisory Board invites community residents interested in the current and future quality of Beaver Lake to attend a public meeting on December 13, 2000, at the Issaquah Lodge from 7 p.m. to 9 p.m. (See map below for specific location.) Key findings from the draft management plan update will be presented. The renewal of the LMD for 2001-2005 will also be discussed.

Updating the current management plan is vital to the ongoing mission of maintaining and protecting Beaver Lake water quality. Lake and stream monitoring data, collected in the Beaver Lake area from October 1996 through September 2000, has been analyzed for water quality trends. The data from this five-year period was used to evaluate water quality and formulate a strategy for ongoing preservation of Beaver Lake.

As part of the update, revised phosphorus and water budgets for the lake were created and separate lake models developed for each major lake basin.

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Issaquah Lodge is located at 25201 SE 24th Street

If coming from the north end of Beaver Lake, take W Beaver Lake Drive SE; follow southwest towards Beaver Lake Park. W Beaver Lake Drive SE becomes SE 24th Street. Issaquah Lodge will be on your left.

If coming from the south end of Beaver Lake, go north on 224th Avenue SE. Turn right at SE 24th Street. Stay on SE 24th Street. (Parallels Beaver Lake Park.) Issaquah Lodge will be on your right.

Plan meeting. . .

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Using these tools, the effectiveness of current water quality regulations were evaluated. These updated lake models were also used to evaluate the impact of additional watershed development on lake water quality. With an updated management plan, the Beaver Lake community will have a way to ensure the future protection of water quality.

The draft plan will be finalized in late December. Copies of the draft plan will be available at the public meeting. Comments on the plan are due December 20, 2000.

Protecting Water Quality

Pollutants are generated with the burning of fuels for heating or driving, land clearing, and fertilizer and pesticides use. Through these actions, dust, heavy metals, petroleum hydrocarbons, and nutrients are introduced into the environment, accumulating on lawns, streets, roofs, driveways, and sidewalks. When it rains, these pollutants wash away to nearby streams and lakes. To reduce their impact, stormwater runoff can be collected in residential areas and treated in a stormwater facility. Examples of these facilities can be found in the new residential neighborhoods surrounding Beaver Lake.

You can do your part by maintaining as much of your land in vegetation rather than patios, roofs, and driveways. By using high efficiency furnaces and fuel economical vehicles, you can also reduce the introduction of fuel by-products into the air. Reducing pollution is about the choices we make each day: carpooling vs. single drivers, brown vs. green lawns, or native plantings vs. extensive lawns. By making small adjustments in our individual habits, we can help maintain good water quality.

Renewal of the LMD Moves Forward

At its November 15, 2000 meeting, the Sammamish City Council adopted the resolution of intent for formation of a new Lake Management District (LMD) at Beaver Lake. The resolution details the conditions for LMD formation and established a public hearing date for receiving comments on the renewal of the LMD. The public hearing will be held at the Sammamish City Hall on January 17, 2001, beginning at 7:30 p.m.

A Recap

As reported in the October edition of the *Beaver Lake Monitor*, the Beaver Lake Management District Advisory Board drafted a LMD proposal for consideration by Beaver Lake property owners. The proposal calls for a two-zone LMD that would raise up to $200,000 over five years. Revenue raised by the district would support continuation of the lake and stream monitoring program, ongoing stormwater quality monitoring, and a semi-annual newsletter.

Proposed Annual Assessments

For the 117 waterfront properties, each household would be assessed $188 annually and raise 55 percent of the total assessment. For the 879 non-waterfront properties located in the proposed district boundaries, each household would be assessed $21 annually and raise 45 percent of the total assessment.

For more information or to get involved in the renewal process, please contact a current board member listed at the right.

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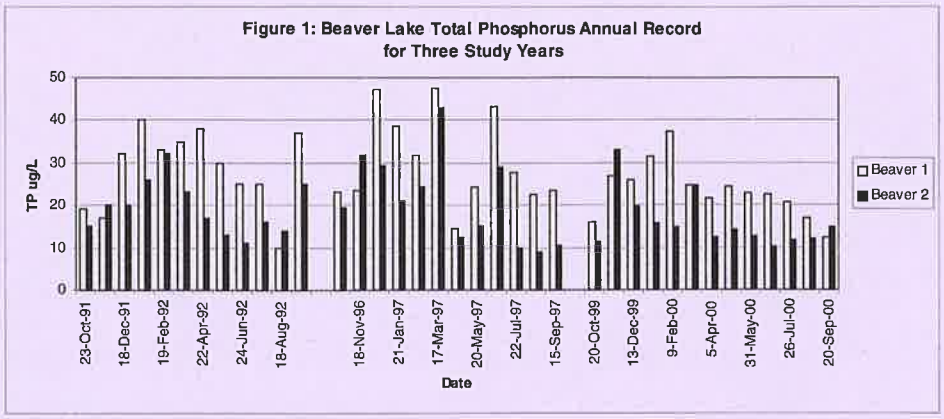
Phosphorus and Beaver Lake Water Quality

Phosphorus is a common element found in soil, rock, plant and animal tissue, and air. All organisms rely on phosphorus to grow. In freshwater environments, phosphorus plays a particular role in plant growth providing a basis for the food chain which supports higher organisms like zooplankton and fish.

Phosphorus can be measured in a variety of forms. Most commonly, total phosphorus and ortho-phosphate. Total phosphorus represents both organic and inorganic forms of phosphorus while ortho-phosphate represents the dissolved fraction that is available for algal growth.

Both forms of phosphorus have been measured for Beaver Lake. In Figure 1, monthly concentrations for total phosphorus are shown for both Beaver Lake 1 and Beaver Lake 2. From month to month, surface concentrations vary but generally peak during the winter months when surface inflow to the lake occurs. Concentrations are typically higher in Beaver Lake 1 than Beaver Lake 2. During the most recent study year (1999-2000), total phosphorus surface concentrations have been lower than those observed during 1991-1992 and 1996-1997 (Table 1). Year-to-year variability in phosphorus concentration is largely related to precipitation levels. During wetter years, higher phosphorus concentrations in both lakes are generally observed during the entire year.



When precipitation levels are similar, phosphorus levels are generally stable from year-to-year (1991-1992 vs. 1999-2000). In turn, when phosphorus levels are higher, generally chlorophyll *a* levels (an indicator of algal abundance) are also elevated.

Monthly concentrations for chlorophyll *a* are shown in Figure 2 for the three study years. For both Beaver Lake 1 and Beaver Lake 2, surface concentrations vary from month to month with peak concentrations occurring during the summer. Again, average chlorophyll *a* concentrations were highest during the wettest year (Table 1).

So what does this mean for Beaver Lake water quality? It appears that Beaver Lake water quality is more heavily influenced by

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Table 1: Average Surface Total Phosphorus Concentrations for Three Study Years

Study Year	Beaver Lake 1 Total Phosphorus (µg/L)	Beaver Lake 2 Total Phosphorus (µg/L)	Beaver Lake 1 Chlorophyll *a* (µg/L)	Beaver Lake 2 Chlorophyll *a* (µg/L)	Annual Rainfall @46U* (inches)	Annual Rainfall @MLU* (inches)
1991-1992	28.4	19.3	10.8	3.9	45	not available
1996-1997	30.6	21.2	7.5	10.4	70	63
1999-2000	23.3	15.9	5.1	5.5	not available	40

*The precipitation record for the Beaver Lake area was taken from site 46U (Black Nugget gauge) until midway through the 1999 water year when property access changed. Therefore, the precipitation record from MLU (Mystic Lake gauge) is also shown to allow comparison of annual rainfall levels with surface total phosphorus levels.

Phosphorus. . .

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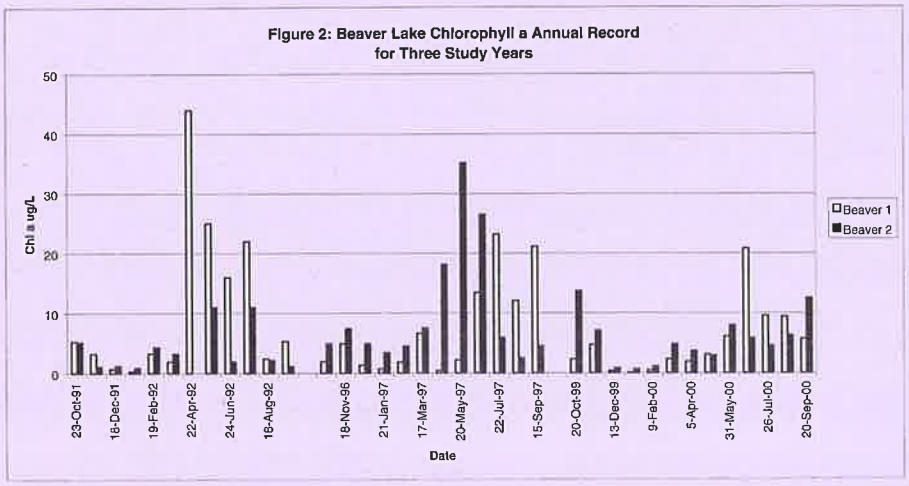
phosphorus originating from tributary sources during wetter years than by more direct changes in phosphorus loading related to land use shifts from forested to residential uses. In making this statement, however, the role of stormwater treatment systems in mitigating those predicted impacts must also be factored into the assessment of Beaver Lake water quality. Continued treatment of stormwater runoff from new residential development remains paramount in the ongoing preservation of Beaver Lake water quality.



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